

# TPS-L2



*US Model  
Canadian Model  
AEP Model  
UK Model  
E Model*

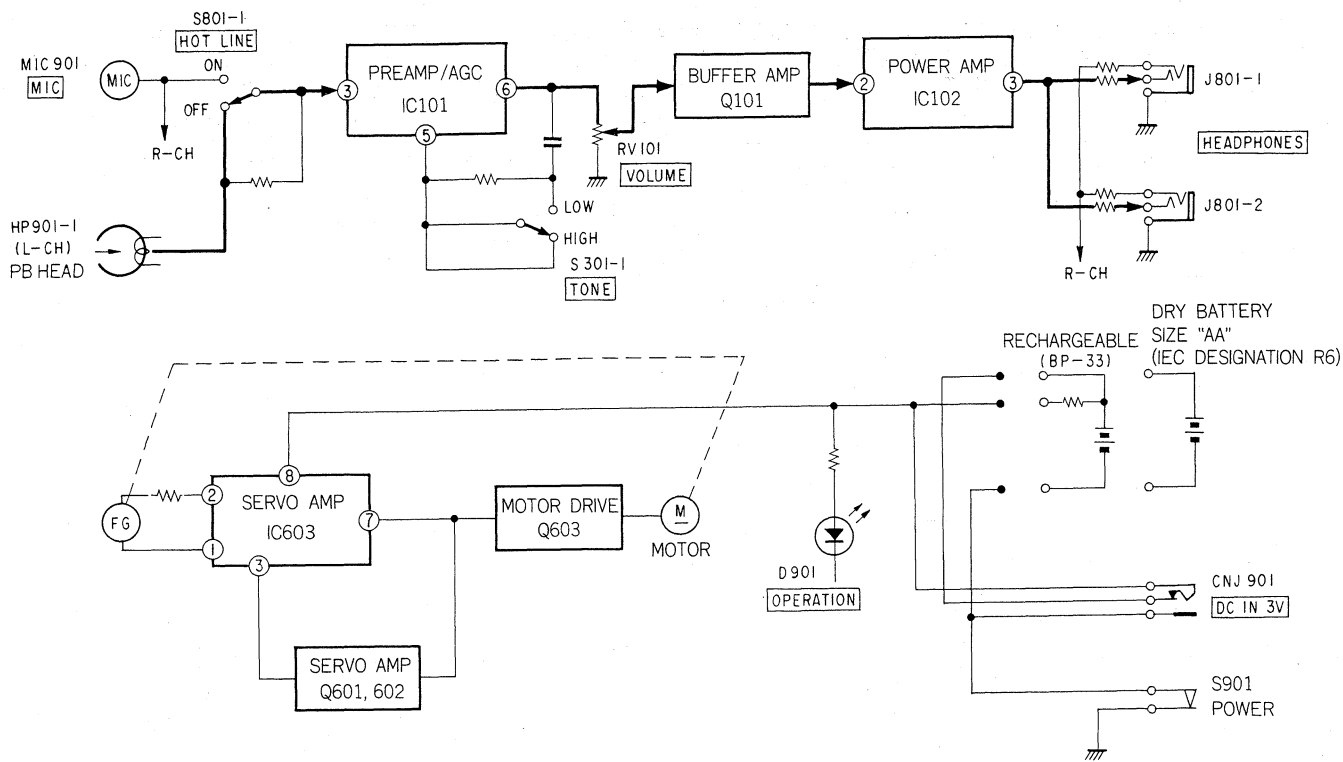
## STEREO CASSETTE PLAYER

### SPECIFICATIONS

<b>Tape Track:</b>	4-track 2-channel stereo	<b>Battery Life:</b>	Continuous playback hours: Approx. 3.5 hours with Eveready Heavy Duty Batteries No. 1215 Approx. 8 hours with Eveready Alkaline Batteries No. E91
<b>Fast Winding Time:</b>	Approx. 2 min. 30 sec. with Sony Cassette C-60	<b>Dimensions:</b>	Approx. 88 (w) x 133.5 (h) x 29 (d) mm 3 1/2 (w) x 5 5/16 (h) x 1 3/16 (d) inches not including projecting parts and controls
<b>Frequency Response:</b>	40 — 12,000 Hz	<b>Weight:</b>	Approx. 390 g, 13 7/8 oz including batteries
<b>Power Output:</b>	15 mW x 2 (at 10 % harmonic distortion) with headphones having impedance of 35 $\Omega$ at dc operation		
<b>Outputs:</b>	Two headphones jacks (stereo minijack) rated output 0.04 V (—26 dB) at load impedance 8 $\Omega$ load impedance 8 $\Omega$ or higher, and 300 $\Omega$ or lower		
<b>Power Requirements:</b>	3 V dc, two batteries size AA (IEC designation R6), or optional Sony Rechargeable Battery Pack BP-33 120 V ac, 60 Hz with optional Sony AC Power Adaptor AC-31 12 V car battery with optional Sony Car Battery Cord DCC-127A		
<b>Power Consumption:</b>	5 W (60 Hz) with Sony AC Power Adaptor AC-31		

**SONY**®  
**SERVICE MANUAL**

SECTION 1  
BLOCK DIAGRAM

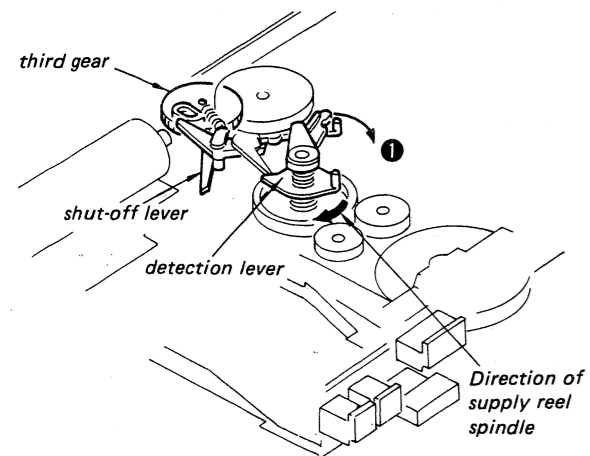


## SECTION 2 OPERATION DESCRIPTION

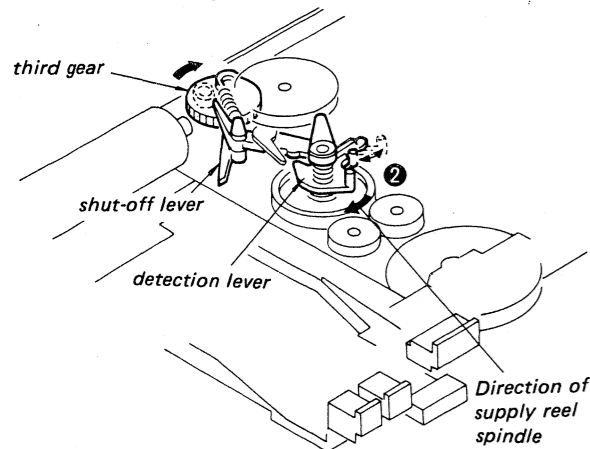
### AUTOMATIC SHUT-OFF MECHANISM

#### • During FWD (or RECORD) operation

While the supply reel is rotating, the detection lever is always pulled in direction ①.



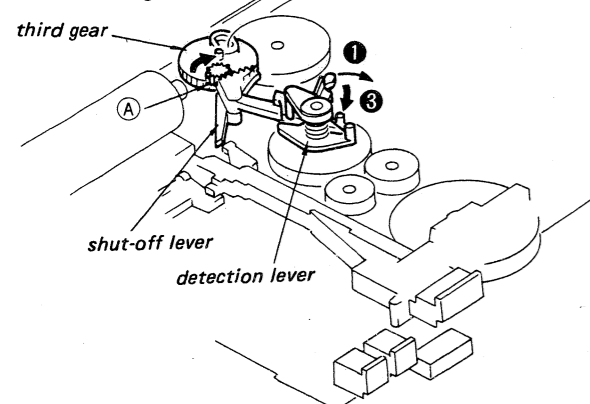
The shut-off lever is repeating the ② motion owing to the third gear rotation.



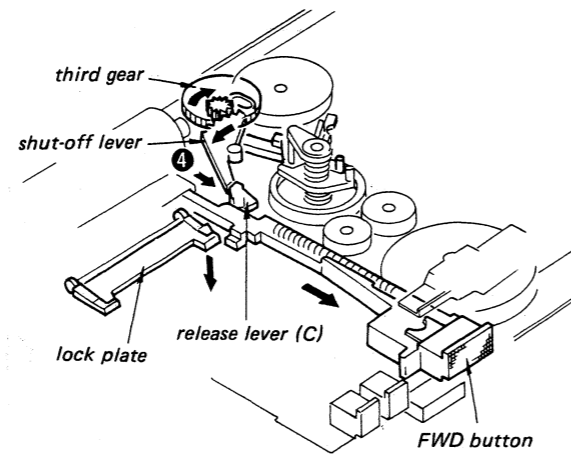
#### • When the supply reel spindle stops: (end of the tape)

The detection lever is not pulled in direction ① but moves in direction ③ owing to the third gear rotation.

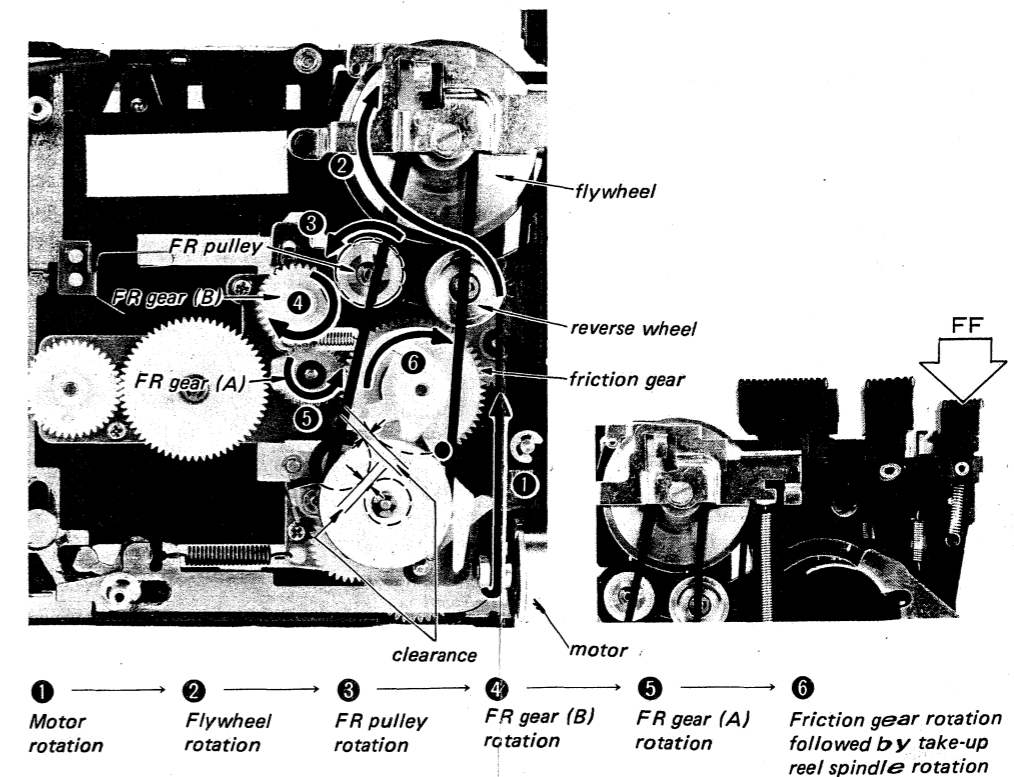
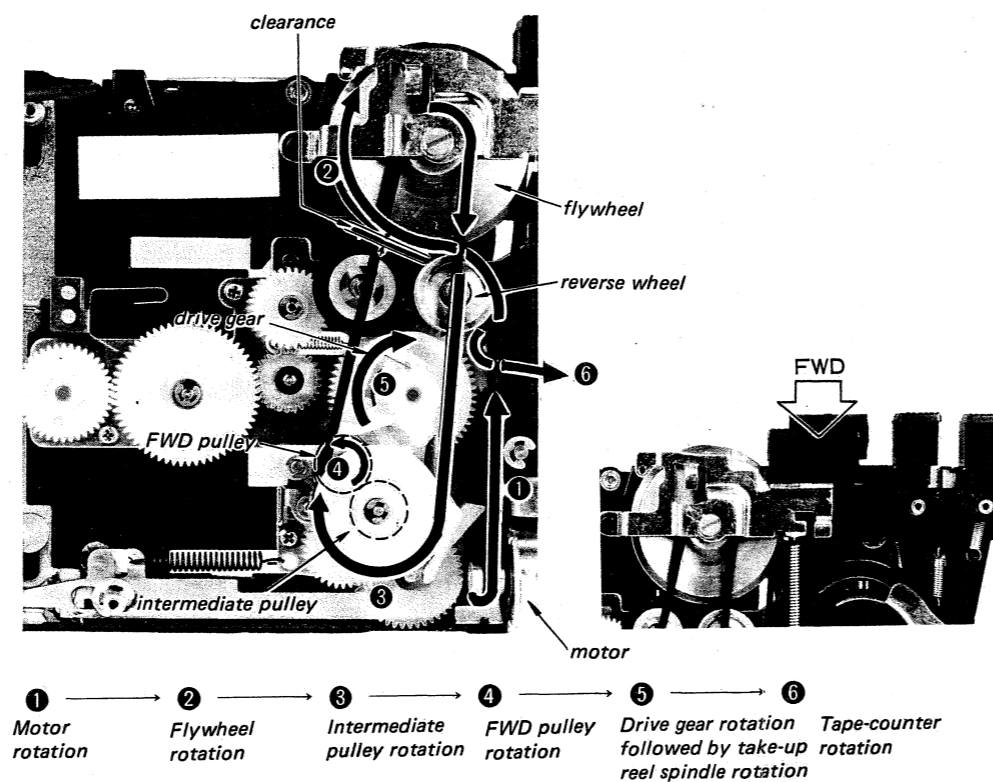
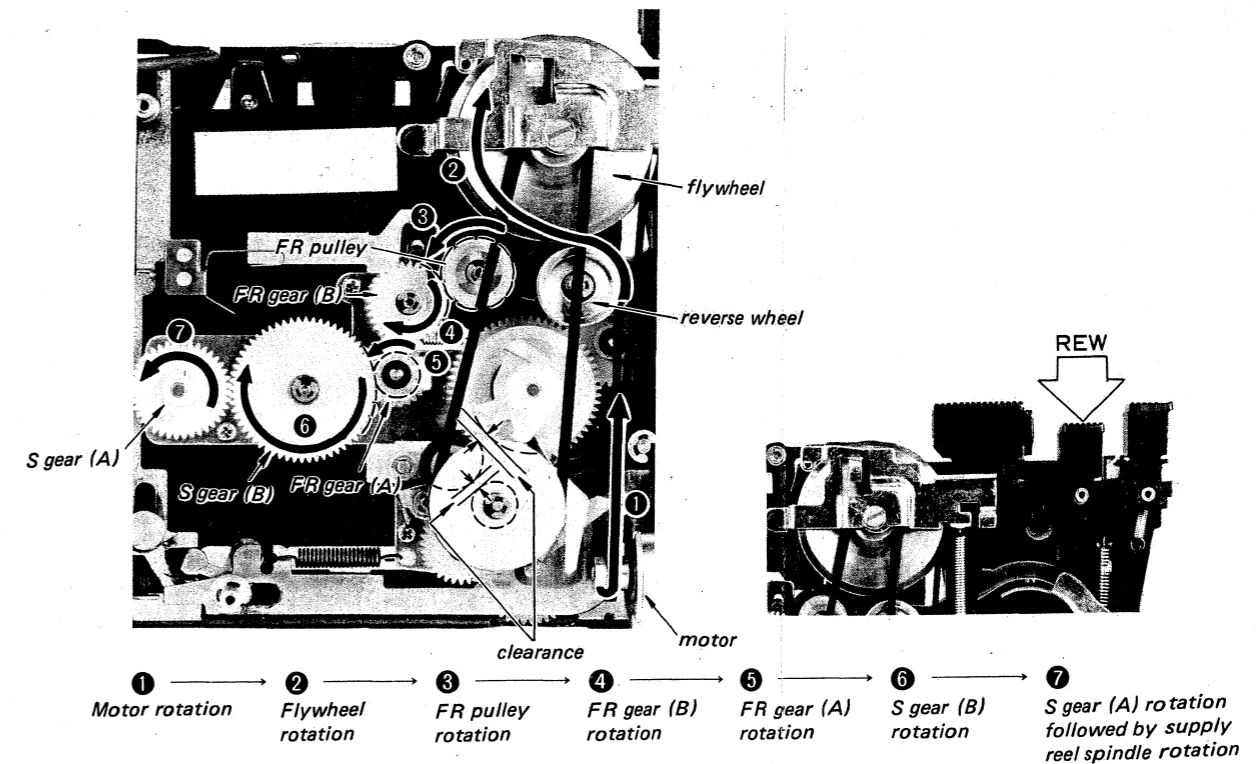
The teeth of the shut-off lever mesh with the teeth of the third gear.



As the third gear turns further, the shut-off lever moves in direction ④, pushing the release lever (c) and releasing the FWD button. (RECORD button and FWD button are released in RECORD mode.)



### DIRECTION OF ROTATION

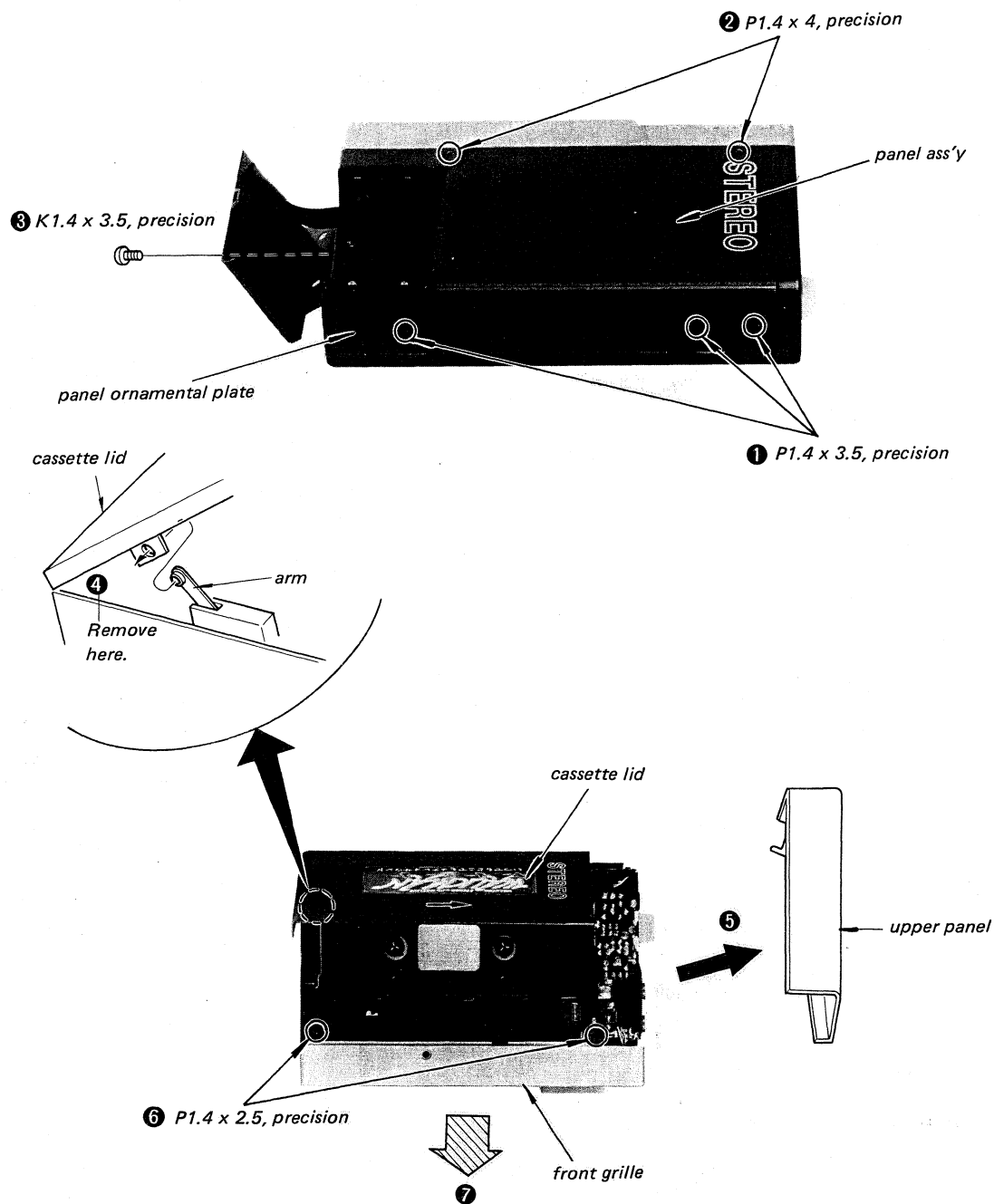


## SECTION 3 DISASSEMBLY

**Note:** Follow the disassembly procedure in the numerical order given.

### PANEL ORNAMENTAL PLATE/PANEL ASS'Y/UPPER PANEL/FRONT GRILLE ASS'Y

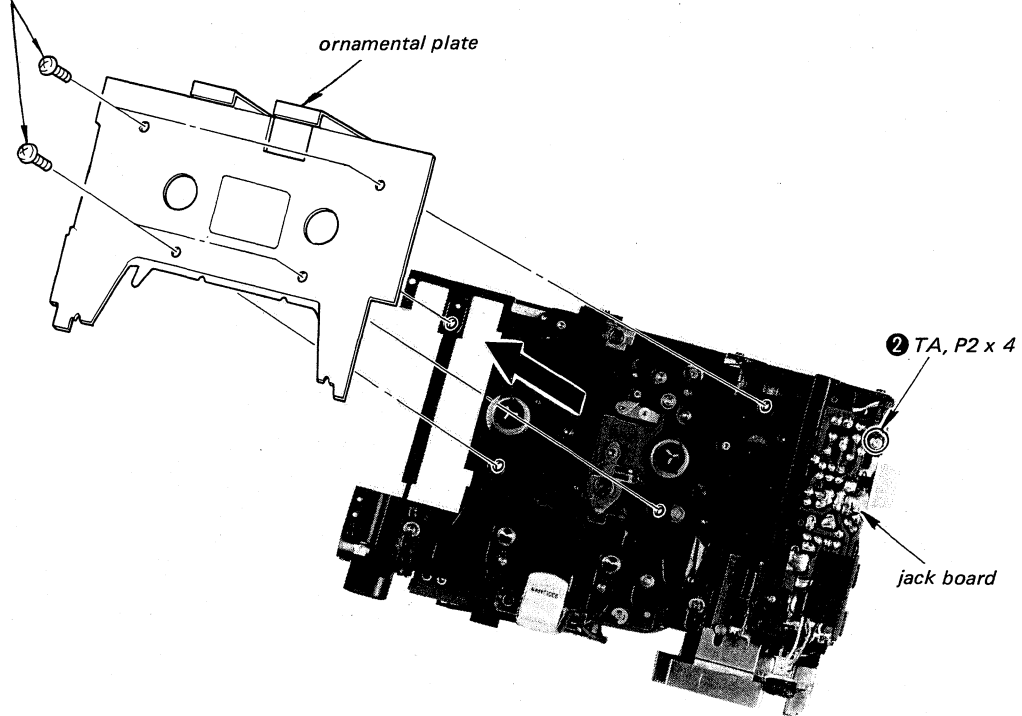
- Panel Ornamental Plate : ①
- Panel Ass'y : ②~④
- Upper Panel : ⑤
- Front Grille Ass'y : ⑥, ⑦



ORNAMENTAL PLATE/JACK BOARD

- Ornamental Plate : ①
- Jack Board : ②

① P1.4 x 1.6, precision

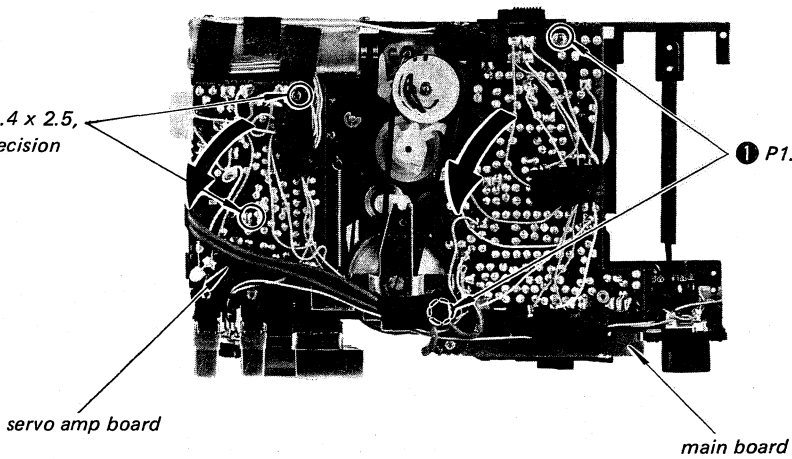


MAIN BOARD/SERVO AMP BOARD

- Main Board : ①
- Servo Amp Board : ②

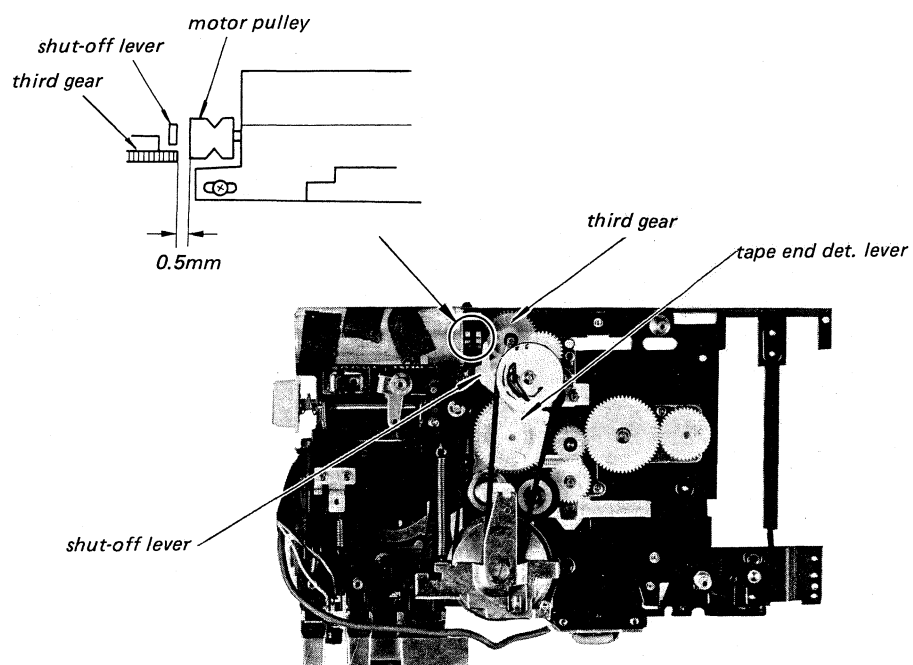
② P1.4 x 2.5, precision

① P1.4 x 2.5, precision



# CAUTION WHEN INSTALLING MOTOR

Make sure part marked  $\rightarrow||\leftarrow$  is just 0.5mm long.  
Otherwise, auto-shut-off mechanism may operate  
before end of tape.



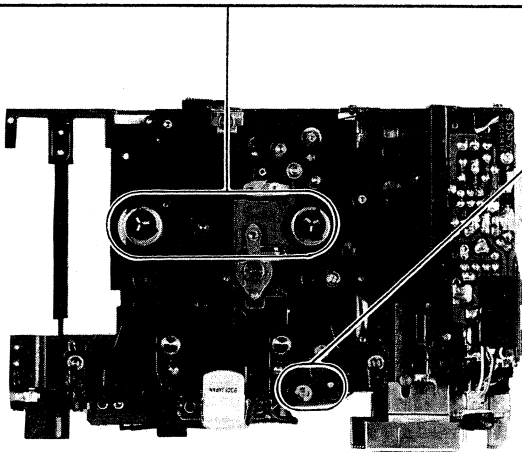
## SECTION 4 ADJUSTMENTS

### 4-1. MECHANICAL ADJUSTMENTS

#### Torque Measurement

Power Supply Voltage: 2.5V dc

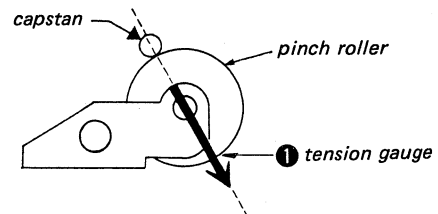
	SONY torque meter	Meter reading
FWD	CQ-102	22.5 – 45g·cm
FF, REW CUE, REV	CQ-201	55g·cm or more
Back tension	CQ-102	2 – 3.5g·cm



#### Pinch Roller Pressure Measurement

Mode: playback

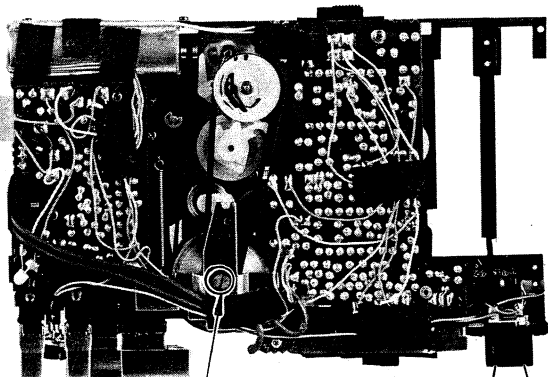
- Slowly return the pinch roller and read the tension gauge just when the pinch roller starts rotating.



200 – 300g  
(7 – 10.6 oz)

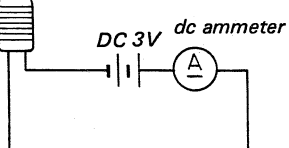
#### Flywheel Thrust Play Adjustment

– Playback Mode –



thrust screw

DC IN  
3V



- Turn the thrust screw counterclockwise until the screw tip leaves from the flywheel shaft.
- Gradually turn the thrust screw clockwise to the position where the motor current suddenly increases.
- Then, turn the thrust screw counterclockwise about  $\frac{1}{4}$  turn from the position obtained in step 2.
- Secure the thrust screw with locking compound.

## 4-2. ELECTRICAL ADJUSTMENTS

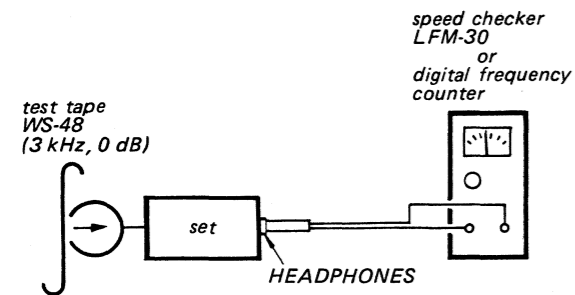
### Tape Speed Adjustment

#### Setting:

VOLUME control: mechanical mid

#### Procedure:

Mode: playback

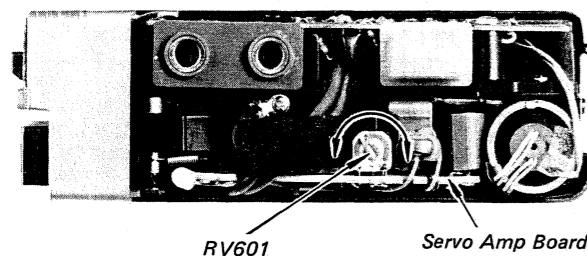


#### Specification:

Speed checker	Digital frequency counter
$\pm 2\%$	2,940 – 3,060Hz

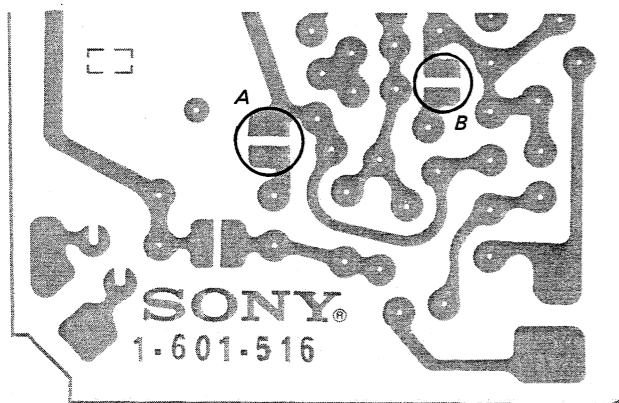
- 1) Connect the patterns marked "A" before this adjustment.
- 2) When adjustment is impossible by turning RV601, connect the patterns marked "B".

#### Adjustment Location:



RV601

Servo Amp Board



A

B

SONY  
1-601-516

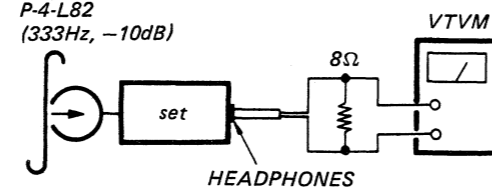
### Playback Level Adjustment

#### Setting:

VOLUME: maximum

#### Procedure:

test tape  
P-4-L82  
(333Hz, -10dB)

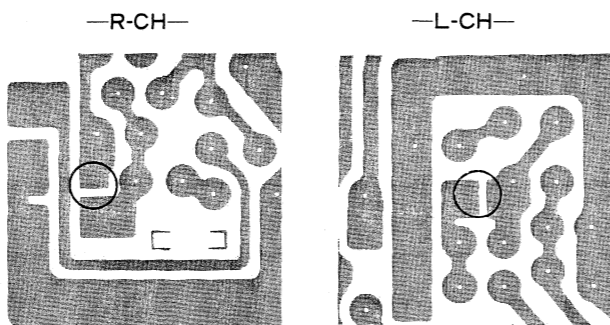


#### Specification:

Level difference between channels:  
less than 3dB

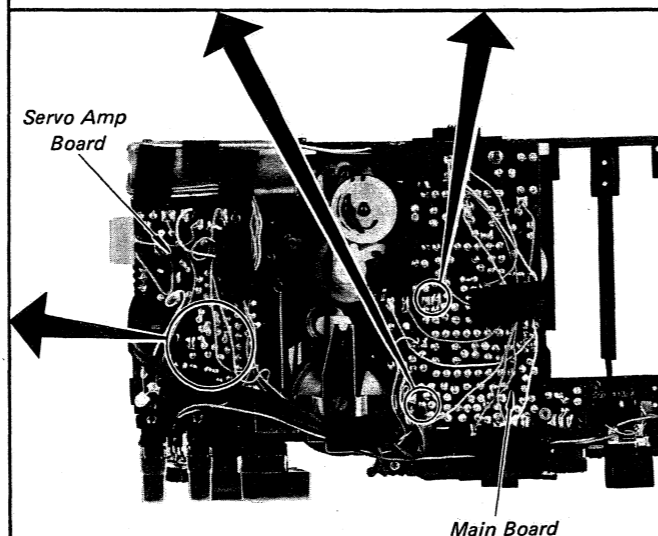
- 1) In case the specification is not met, connect the patterns of channel indicating higher level.
- 2) Check that the HEADPHONES levels do not change in playback mode while changing the mode from playback to stop several times.

#### Adjustment Location:



—R-CH—

—L-CH—



Servo Amp Board

Main Board

### Playback Head Azimuth Adjustment

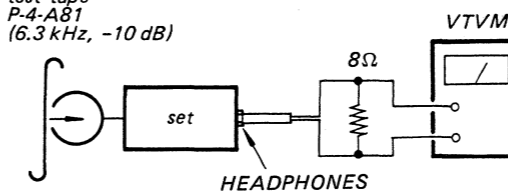
#### Setting:

VOLUME control: mechanical mid

#### Procedure:

1. Mode: playback

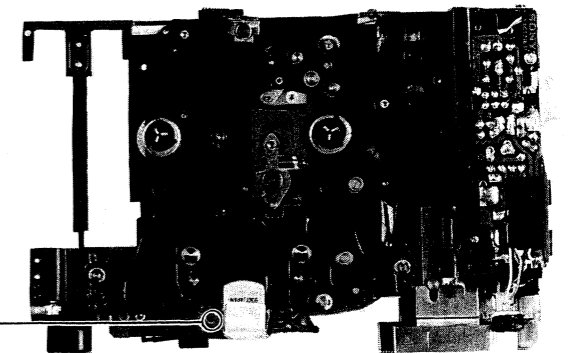
test tape  
P-4-A81  
(6.3 kHz, -10 dB)



2. Turn the adjustment screw for maximum VTVM reading.

**Note:**

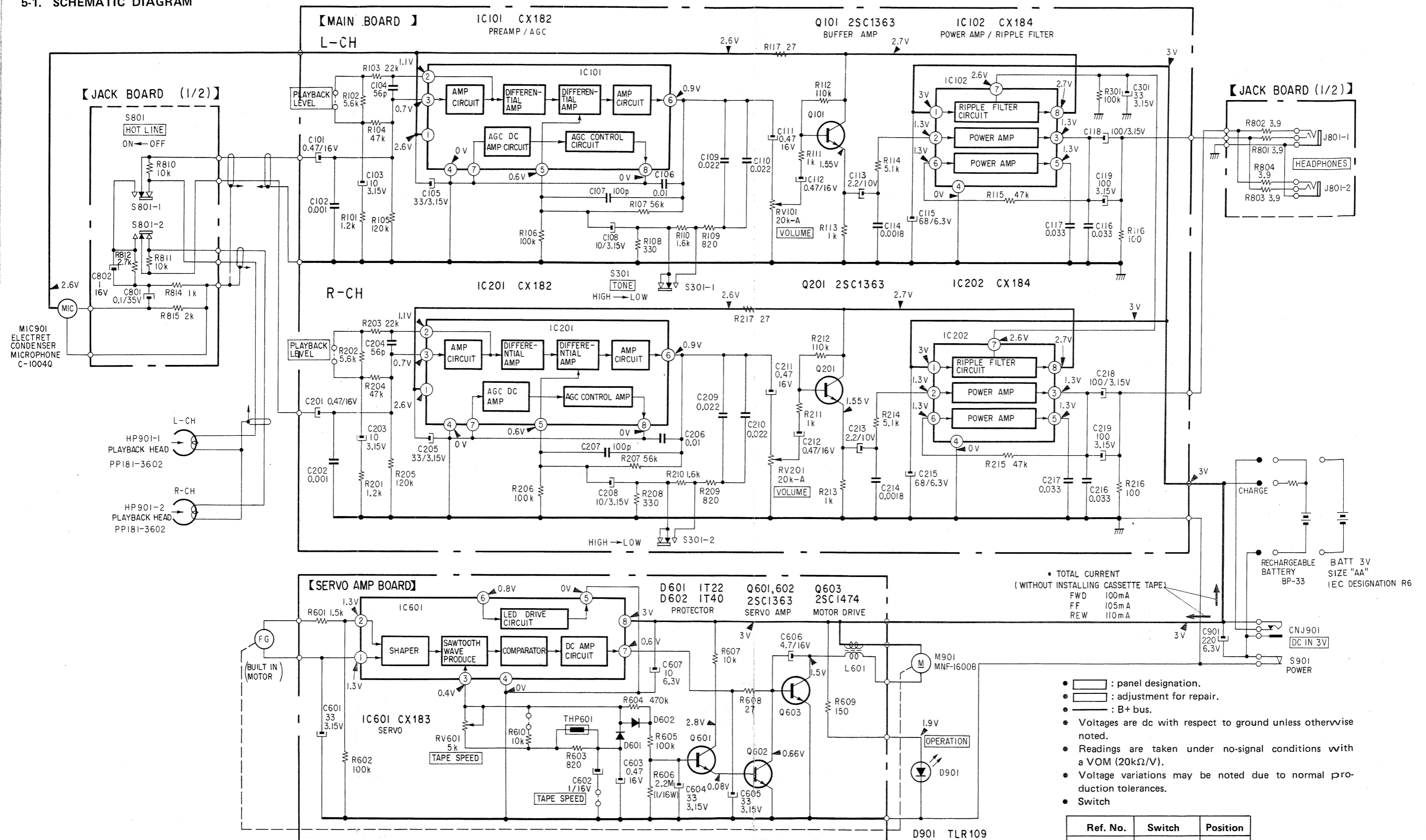
- Several peaks may appear, but take the maximum.
- Finish turning the adjustment screw clockwise direction.



# SECTION 5 DIAGRAMS

TPS-L2 TPS-L2

## 5-1. SCHEMATIC DIAGRAM



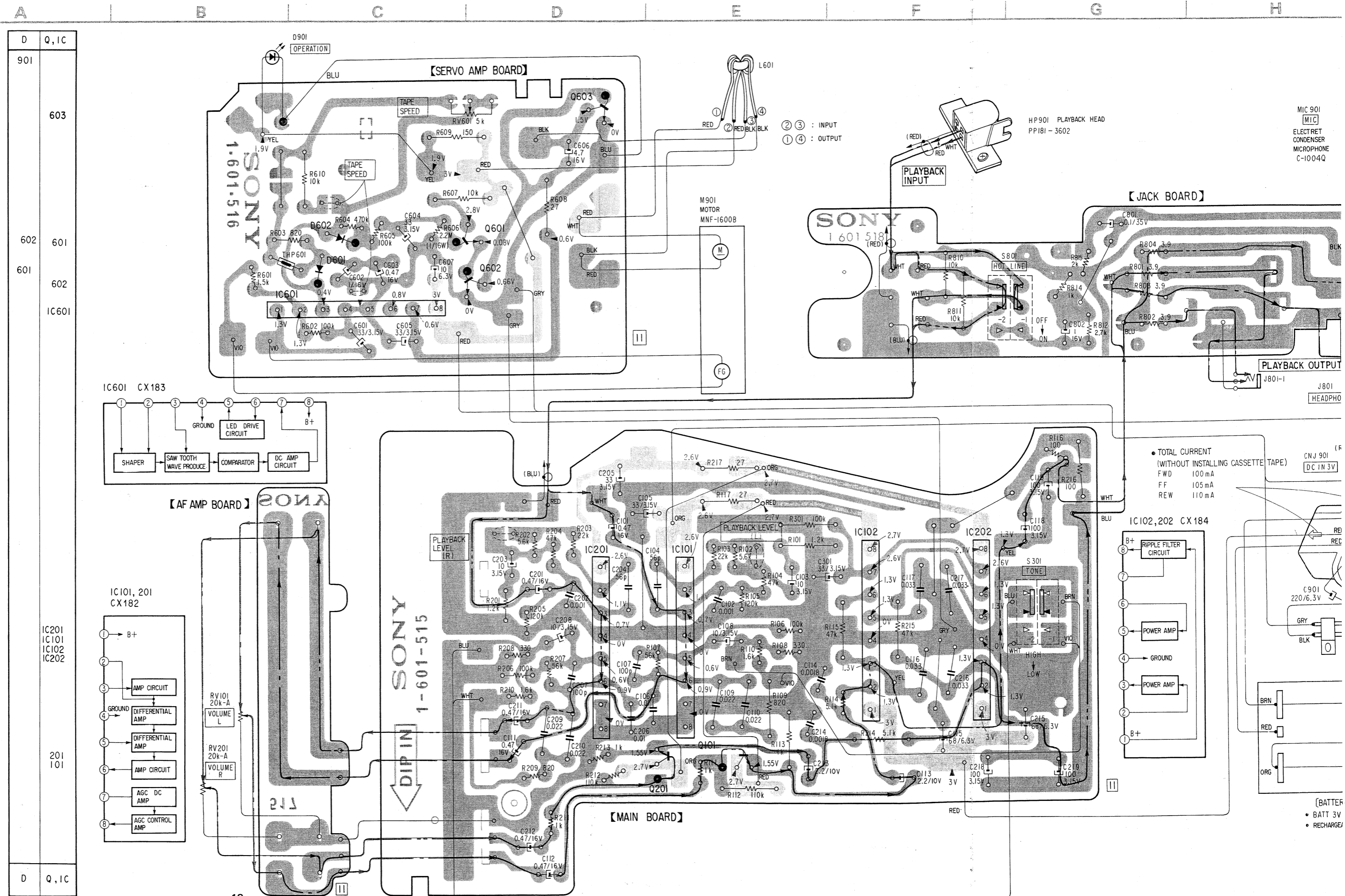
**Note:**

- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF} : \mu\text{F}$  50WV or less are not indicated except for electrolytics.
- All resistors are in ohms,  $\frac{1}{4}\text{W}$  unless otherwise noted.  $\text{k}\Omega : 1000\Omega$ ,  $\text{M}\Omega : 1000\text{k}\Omega$

Ref. No.	Switch	Position
S301-1, 2	TONE	HIGH
S801-1, 2	HOT LINE	OFF
S901	POWER	OFF

5-2. MOUNTING DIAGRAM  
— Conductor Side —

TPS-L2 TPS-L2





# SECTION 6 EXPLODED VIEWS

6-1.

## Note:

- Items marked "A" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted. (-) = slotted head

- Circled letters (A to Z) are applicable to European models only.
- Refer to page 22 for dimensions and part No. of precision screws.

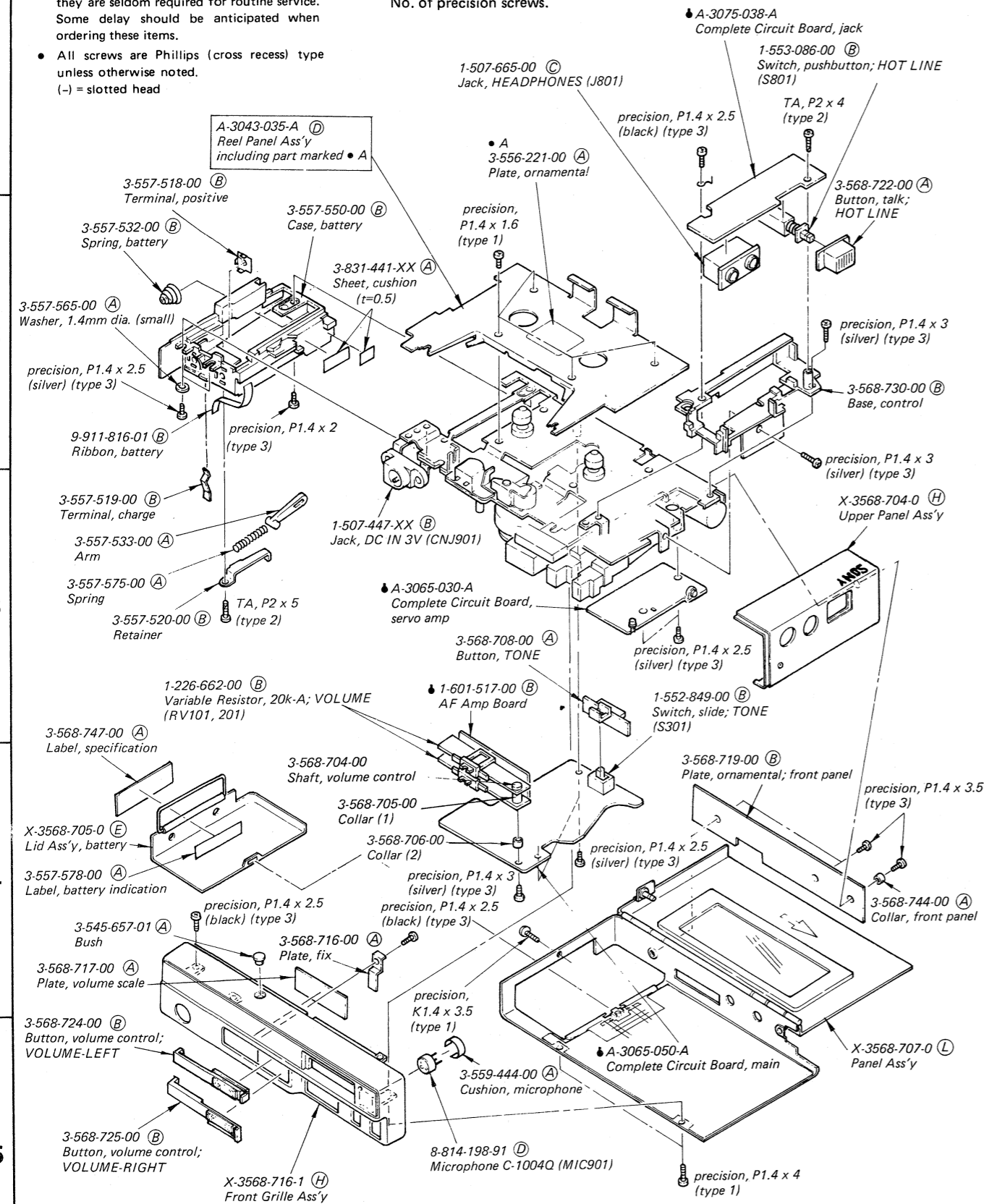
1

2

3

4

5



6-2.

## Note:

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- All screws are Phillips (cross recess) type unless otherwise noted. (-) = slotted head

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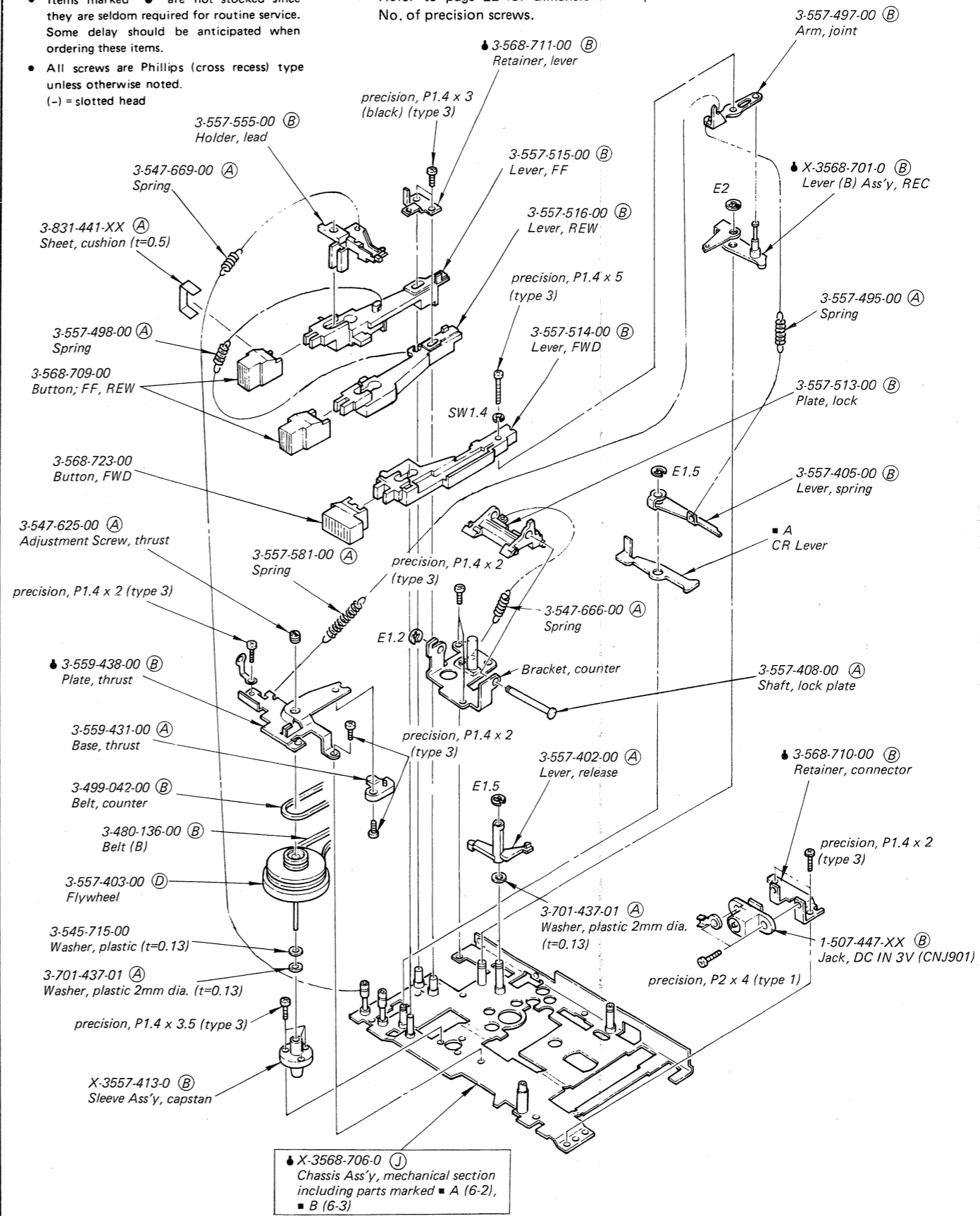
1

2

3

4

5



6-3.

## Note:

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- All screws are Phillips (cross recess) type unless otherwise noted. (-) = slotted head

8-829-373-0 Playback H (HP901)

3-560-327-0 Spring, heat

3-701-437-0 Washer, plate

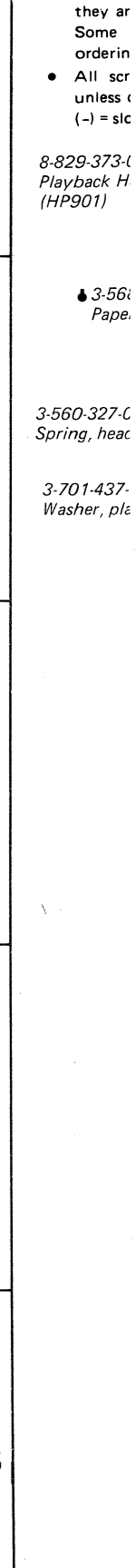
1

2

3

4

5





ELECTRICAL PARTS LIST

6-4.

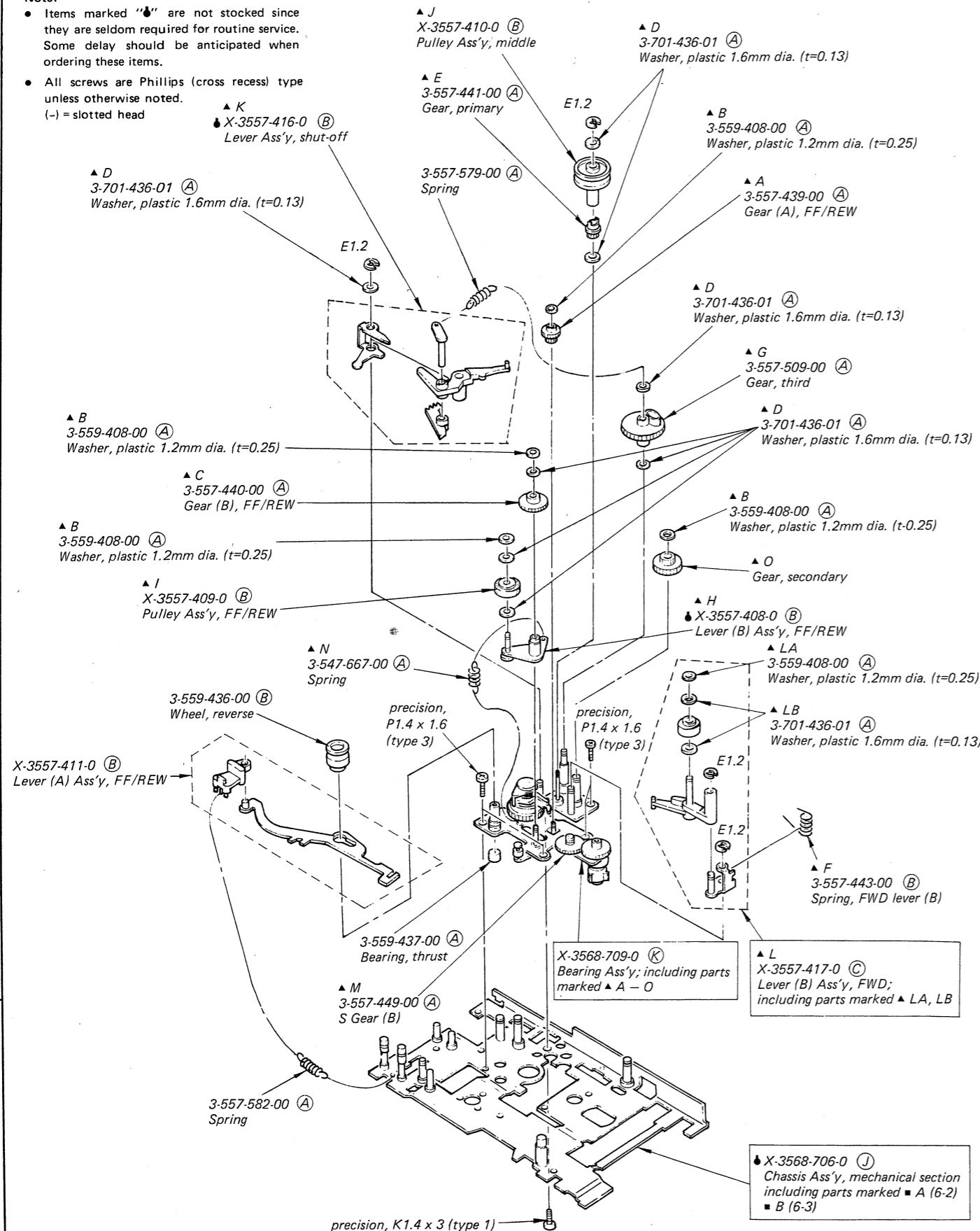
Note:

- Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- All screws are Phillips (cross recess) type unless otherwise noted.
- (-) = slotted head

- Refer to page 22 for dimensions and part No. of precision screws.

- Circled letters (A to Z) are applicable to European models only.



Note: Circled letters (A to Z) are applicable to European models only.

Ref. No. Part No. Description

SEMICONDUCTORS

Transistors

⇒ Q101, 201 8-729-663-47 (B) 2SC1364  
Q601, 602  
Q603 8-760-335-10 (B) 2SC1474

ICs

IC101, 201 8-751-820-00 (C) CX182  
IC102, 202 8-751-840-00 (F) CX184  
IC601 8-751-830-02 (E) CX183

Diodes

⇒ D601 8-719-422-21 (B) 1T22AM  
⇒ D602 8-719-815-55 (B) 1S1555  
D901 8-719-801-09 (B) TLR109

CAPACITORS

All capacitors are in  $\mu$ F and tantalum unless otherwise noted.  
50WV or less are not indicated except for electrolytics or tantalums. p :  $\mu$ F, elect : electrolytic

C101, 201	1-131-455-00 (B) 0.47	16V	
C102, 202	1-161-026-00 (A) 0.001		ceramic (semiconductor)
C103, 203	1-131-389-00 (B) 10	3.15V	
C104, 204	1-101-884-21 (A) 56p		ceramic
C105, 205	1-131-392-00 (B) 33	3.15V	
C106, 206	1-161-032-00 (A) 0.01		ceramic (semiconductor)
C107, 207	1-102-106-00 (A) 100p	50V	ceramic
C108, 208	1-131-389-00 (B) 10	3.15V	
C109, 209	1-161-017-11 (A) 0.022		ceramic (semiconductor)
C110, 210			
C111, 211	1-131-455-00 (B) 0.47	3.15V	
C112, 212			
C113, 213	1-131-419-00 (B) 2.2	10V	
C114, 214	1-161-004-00 (A) 0.0018		ceramic (semiconductor)
C115, 215	1-131-387-00 (B) 47	6.3V	

⇒ : Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

Ref. No. Part No. Description

C116, 216	1-161-035-00 (A) 0.033		ceramic (semiconductor)
C117, 217			
C118, 218	1-131-395-00 (B) 100	3.15V	
C119, 219			
C301	1-131-392-00 (B) 33	3.15V	
C601	1-131-392-00 (B) 33	3.15V	
C602	1-131-451-00 (B) 0.1	16V	
C603	1-131-455-00 (B) 0.47	16V	
C604, 605	1-131-392-00 (B) 33	3.15V	
C606	1-131-375-11 (B) 47	10V	
C607	1-131-383-00 (B) 10	6.3V	
C801	1-131-451-00 (A) 0.1	16V	
C901	1-123-296-00 (B) 220	6.3V	elect

RESISTORS

All resistors are in ohms. Common  $\frac{1}{4}$ W carbon resistors are omitted. Check schematic diagram for their values.

R101, 201	1-246-784-00 (A) 1.2k	1/8W	carbon
R102, 202	1-246-792-00 (A) 5.6k	1/8W	carbon
R103, 203	1-246-799-00 (A) 22k	1/8W	carbon
R104, 204	1-246-803-00 (A) 47k	1/8W	carbon
R105, 205	1-246-808-00 (A) 120k	1/8W	carbon
R106, 206	1-246-807-00 (A) 100k	1/8W	carbon
R107, 207	1-246-804-00 (A) 56k	1/8W	carbon
R108, 208	1-246-777-00 (A) 330	1/8W	carbon
R109, 209	1-246-782-00 (A) 820	1/8W	carbon
R110, 210	1-246-846-00 (A) 1.6k	1/8W	carbon
R111, 211	1-246-783-00 (A) 1.0k	1/8W	carbon
R112, 212	1-246-868-00 (A) 110k	1/8W	carbon
R113, 213	1-246-783-00 (A) 1.0k	1/8W	carbon
R114, 214	1-246-852-00 (A) 5.1k	1/8W	carbon
R115, 215	1-246-803-00 (A) 47k	1/8W	carbon
R116, 216	1-246-771-00 (A) 100	1/8W	carbon
R117, 217	1-246-764-00 (A) 27	1/8W	carbon
R301	1-246-807-00 (A) 100k	1/8W	carbon
R601	1-246-785-00 (A) 1.5k	1/8W	carbon
R602	1-246-807-00 (A) 100k	1/8W	carbon
R603	1-246-839-00 (A) 430	1/8W	carbon
R604	1-247-049-00 (A) 470k	1/8W	carbon
R605	1-247-807-00 (A) 100k	1/8W	carbon

**Note:** Circled letters (A to Z) are applicable to European models only.

<i>Ref. No.</i>	<i>Part No.</i>	<i>Description</i>			
R606	1-211-697-00	A 2.2M	1/16W	micro	
R607	1-246-795-00	A 10k	1/8W	carbon	
R608	1-246-764-00	A 27	1/8W	carbon	
R609	1-246-773-00	A 150	1/8W	carbon	
R610	1-246-795-00	A 10k	1/8W	carbon	
R801, 802 R803, 804	1-246-754-00	A 3.9	1/8W	carbon	
R810, 811	1-246-795-00	A 10k	1/8W	carbon	
R812	1-246-788-00	A 2.7k	1/8W	carbon	
R814	1-246-783-00	A 1.0k	1/8W	carbon	
R815	1-246-847-00	A 2.0k	1/8W	carbon	
RV101, 201	1-226-662-00	B 20k-A, variable; VOLUME			
RV601	1-226-488-00	B 5k, adjustable			
SWITCHES					
S301	1-552-849-00	B Slide, TONE			
S801	1-553-086-00	B Pushbutton, HOT LINE			
S901	1-553-226-00	B Leaf			
MISCELLANEOUS					
J801	1-507-665-00	C Jack, HEADPHONES			
CNJ901	1-507-447-XX	B Jack, DC IN 3V			
HP901	8-829-373-00	K Playback Head, PP181-3602			
L601	1-407-847-00	B 35μH, microinductor			
M1	8-835-008-11	S Motor, MNF-1600B			
MIC901	8-814-198-91	D Microphone, C-1004Q			
THP601	1-800-535-00	B Thermistor			

PRINTED CIRCUIT BOARD

- ♣ 1-601-515-00 B Main Board
- ♣ 1-601-516-00 B Servo Amp Board
- ♣ 1-601-517-00 B AF Amp Board
- ♣ 1-601-518-00 B Jack Board

COMPLETE CIRCUIT BOARD

- ♣ A-3065-030-A Servo Amp
- ♣ A-3068-050-A Main
- ♣ A-3075-038-A Jack

ACCESSORIES AND PACKING MATERIALS

*Part No.*      *Description*

X-3568-718-0 K Carrying Case Ass'y

1-506-400-00 E Adaptor, plug (E model)  
1-528-052-00 E Alkaline Battery, size AA  
(IEC designation R6)  
(US, Canadian, E model)

3-568-738-00 Bag, polyethylene  
3-568-739-00 B Cushion, upper  
3-568-741-00 C Cushion  
3-568-751-00 D Carton

3-568-755-00 C Band, shoulder  
3-701-622-00 A Bag, polyethylene  
3-701-625-00 Bag, polyethylene (US model)  
3-783-008-11 Manual, instruction  
(AEP, UK model)  
3-783-008-21 B Manual, instruction (US model)

3-783-008-51 Manual, instruction  
(E, Canadian model)  
3-793-233-21 Leaflet (US model)  
3-794-790-51 Leaflet

8-893-522-00 F Tape, demonstration, CD-811  
8-851-122-90 Q Headphone, MDR-3L2

DIMENSIONS AND PART NO. OF PRECISION SCREWS

TYPE	⊕ P (Pan-head screw)			⊕ K (Flat-countersunk-head screw)		
	d mm	H mm	D mm	d mm	H mm	D mm
TYPE 1	1.4	0.5	2	1.4	0.45	2
	2	0.6	3			
TYPE 3	1.4	0.8	2.5			

TYPE	Size (mm) (d x L)	Part No.		TYPE	Size (mm) (d x L)	Part No.	
		Silver	Black			Silver	Black
TYPE 1	P1.4 x 1.6		7-627-551-08	TYPE 3	P1.4 x 1.6	7-627-850-47	
	P1.4 x 2.5		7-627-551-28		P1.4 x 2		7-627-850-08
	P1.4 x 4		7-627-551-78		P1.4 x 2.5	7-627-850-17	7-627-850-18
	P2 x 4	7-627-553-47			P1.4 x 3	7-627-850-27	7-627-850-28
	K1.4 x 1.6		7-627-451-08		P1.4 x 3.5		7-627-850-58
	K1.4 x 3		7-627-451-28		P1.4 x 5	7-627-851-27	
	K1.4 x 3.5		7-627-451-48				

- Items marked "♣" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Sony Corporation

9-954-823-11  
(W/MDR-3L2)

© 1979

-22-

79K04122-1  
Printed in Japan

# MDR-3L2

*US Model  
Canadian Model  
AEP Model  
UK Model  
E Model*



## STEREO HEADPHONES

### SPECIFICATIONS

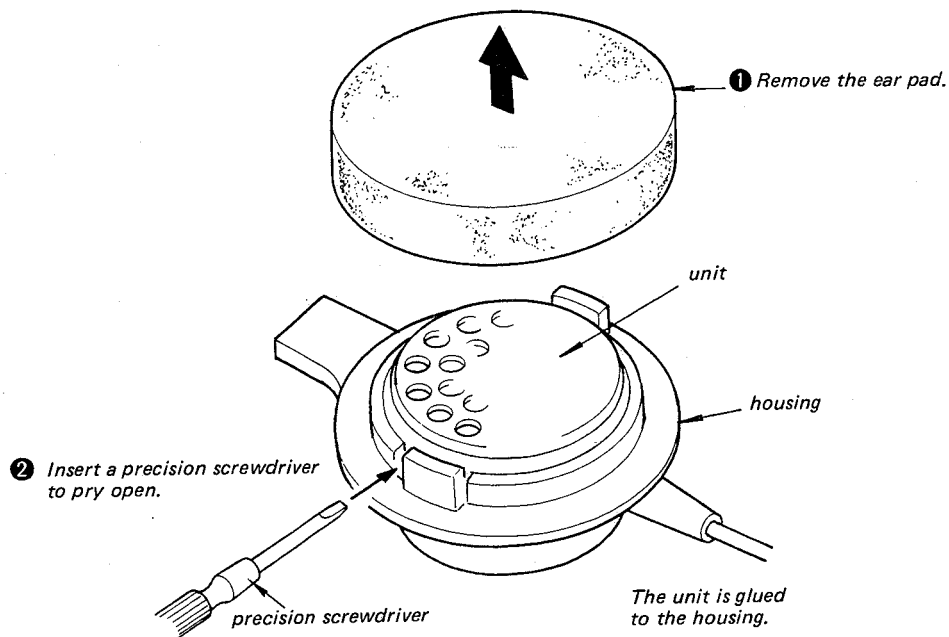
Type:	Dynamic
Driver Units:	23 mm dia., dome
Impedance:	35 $\Omega$ at 1 kHz
Sensitivity:	96 dB/mW
Rated Power:	0.15 W
Power Handling Capacity:	0.1 W
Frequency Response:	40 — 20,000 Hz
Cord Length:	2 m long with mini plug
Weight:	Approx. 45 g (without cord)

**SONY**<sup>®</sup>  
**SERVICE MANUAL**

## 1. DISASSEMBLY

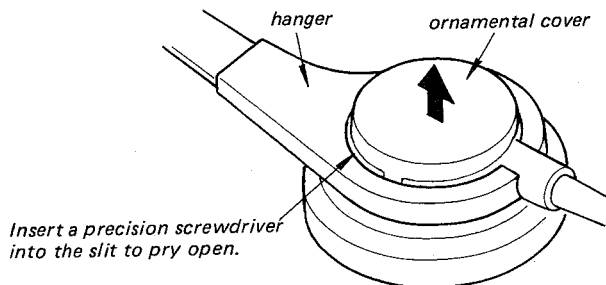
Note: Follow the disassembly procedure in the numerical order given.

### UNIT REMOVAL

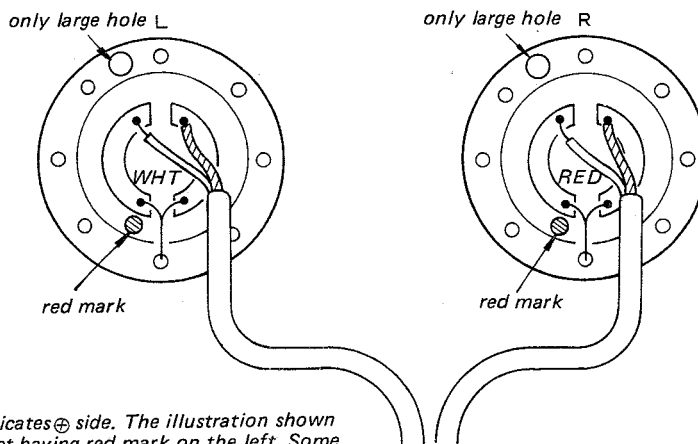


### CORD REPLACEMENT

The replacement of the cord should be done after the ornamental cover removal. (The ornamental cover is glued to the hanger.)

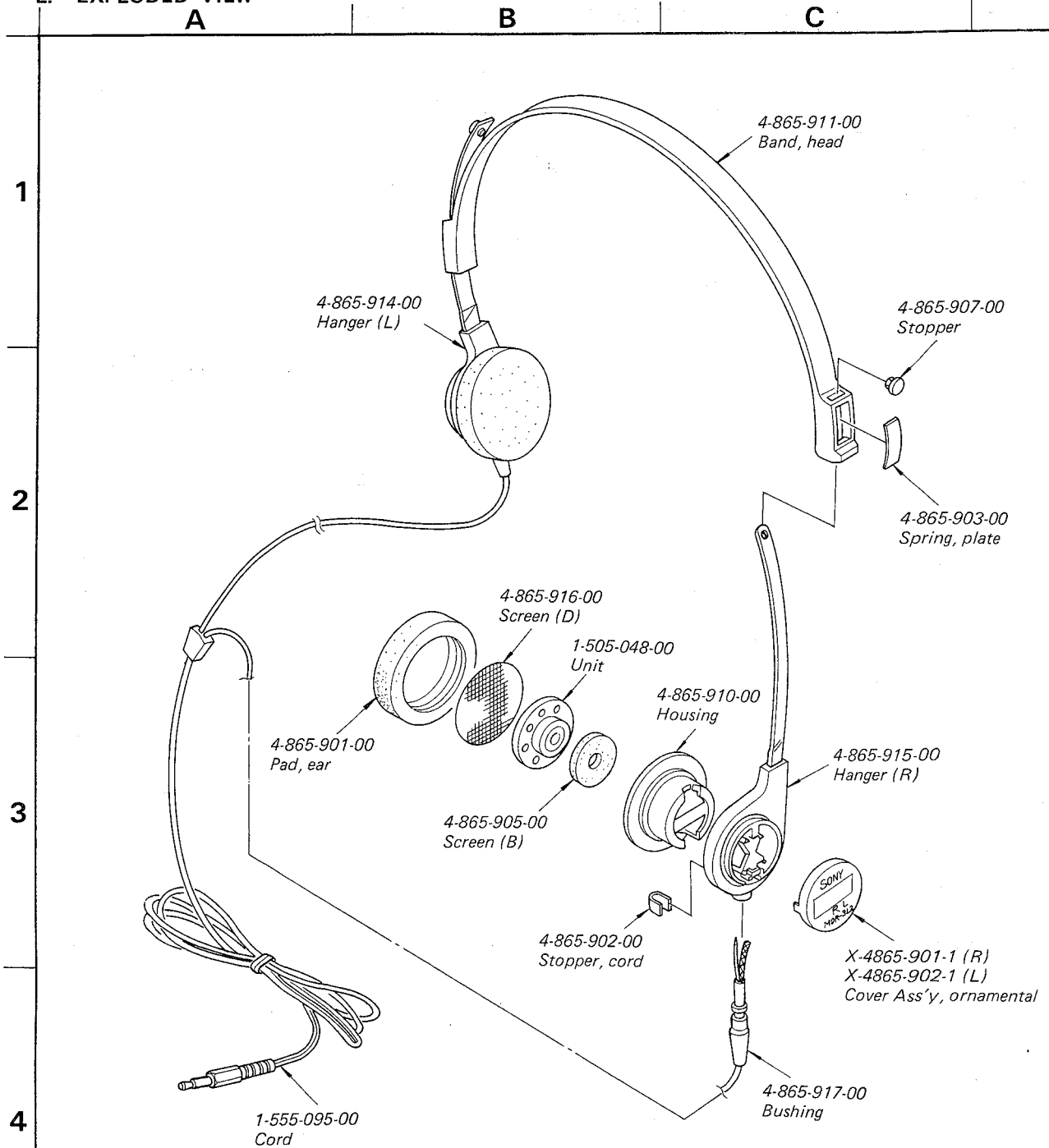


### WIRING DIAGRAM



Red mark indicates  $\oplus$  side. The illustration shown above is the set having red mark on the left. Some sets have red mark on the right.

## 2. EXPLODED VIEW



## ACCESSORIES AND PACKING MATERIALS

<u>Part No.</u>	<u>Description</u>
1-506-400-00	Adaptor, plug
3-701-624-00	Bag
3-770-997-11	Manual, instruction
4-865-919-00	Carton
3-568-738-00	Bag, polyethylene (headphone)